SUPPORT FOR THE AMENDMENTS

The present amendment amend claims 2-4, and add new claims 26-31.

Support for the amendment to claims 2-4 can be found, for example, at paragraphs [0007], [0016], [0019], [0020], [0021], as well as compounds AN-40, AN-49, AN-76, AN-78, AN-103, AN-148, AN-150, AN-213, and AN-268, of Kubota (U.S. 2007/0055085), which is the U.S. pre-grant publication of the originally filed application.

Support for newly added claims 26-28 can be found, for example, at paragraph [0021], as well as original claim 6, of Kubota.

Support for newly added claims 29-31 can be found, for example, at paragraph [0192], as well as compound D1 shown at the top of page 34, of Kubota.

In regard to the exclusionary proviso explicitly excluding compounds AN-40, AN-49, AN-76, AN-78, AN-103, AN-148, AN-150 and AN-213 from the genera of asymmetric monoanthracene derivatives according to formulae (2), (3) and/or (4), it is a well-settled premise of patent law that a negative limitation or exclusionary proviso explicitly excluding an element from a claim is permissible, especially when the element recited in the negative proviso is positively recited in the specification. See MPEP § 2173.05(i) and *In re Johnson*, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) (the specification, having described the whole, necessarily described the part remaining). Asymmetric monoanthracene derivatives represented by compounds AN-40, AN-49, AN-76, AN-78, AN-103, AN-148, AN-150 and AN-213 are positively recited in the originally filed specification (See e.g., [0036]-[0038]).

It is believed that these amendments have not resulted in the introduction of new matter.

REMARKS

Claims 2-4 and 14-31 are currently pending in the present application. Claims 2-4 have been amended, and new claims 26-31 have been added, by the present amendment.

The rejections of: (1) claims 2-4 and 14-25 under 35 U.S.C. § 102(e) as being anticipated over Cosimbescu (U.S. 2005/0089715); and (2) claims 2-4 and 14-25 under 35 U.S.C. § 103(a) as being obvious over Ikeda (EP 1333018), are respectfully traversed in part, and obviated by amendment in part, with respect to claims 2-4 and 14-31.

The rejection of claims 2-4 and 14-25 as being anticipated over Cosimbescu is obviated by the amendment to claims 2-4, which incorporates therein the exclusionary proviso explicitly excluding compounds AN-40, AN-49, AN-76, AN-78, AN-103, AN-148, AN-150 and AN-213 of the present specification (which correspond to compounds Inv-5, Inv-3, Inv-2, Inv-13, Inv-15, Inv-1, Inv-11 and Inv-4, respectively, of Cosimbescu) from the genera of asymmetric monoanthracene derivatives of formulae (2)-(4). Cosimbescu fails to disclose the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively, with sufficient specificity to constitute an anticipation of the claimed invention.

The mere fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. See e.g., *In re Baird*, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994); and *In re Jones*, 21 USPQ2d 1941, 1943 (Fed. Cir. 1992). A *prima facie* case of obviousness requires that the prior art provide a skilled artisan with sufficient motivation and guidance to make the proposed molecular modifications needed to arrive at the claimed compounds. See e.g., MPEP § 2144.08(II)(A)(4), *Daiichi Sankyo v. Matrix Labs*, 2009-1511, (CAFC September 9, 2010); *Procter & Gamble v. Teva Pharmaceuticals*, 90 USPQ2d 1947, 1949 (Fed. Cir. 2009); *Takeda v. Alphapharm*, 83 USPQ2d 1169, 1174 (Fed. Cir. 2007); and *In re Lalu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1984).

Cosimbescu and Ikeda, when considered alone or in combination, fail to disclose or reasonably suggest to a skilled artisan modifying the anthracene derivatives described and exemplified therein to arrive at the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively. Accordingly, a skilled artisan would not have been provided with sufficient motivation and guidance to arrive at the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively, based on the disclosures of Cosimbescu and Ikeda, absent impermissible hindsight reconstruction, thereby precluding a prima facie case of obviousness.

Cosimbescu fails to provide a skilled artisan with sufficient motivation and guidance to particularly select the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively, from either the tremendously large genus of monoanthracene derivatives of formula (I), or the particularly preferred monoanthracene compounds (e.g., Inv-1, Inv-2, Inv-3, Inv-4, Inv-5, Inv-11, Inv-13 and Inv-15) described and exemplified in Cosimbescu. Cosimbescu fails to disclose or reasonably suggest to a skilled artisan the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively. As a result, a skilled artisan would not have arrived at the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the claimed substitution patterns, based on the disclosure Cosimbescu, absent impermissible hindsight reconstruction, thereby precluding a prima facie case of obviousness.

Ikeda fails to provide a skilled artisan with sufficient motivation and guidance to particularly select the *asymmetric* monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively, from either the *tremendously large genus* of anthracene derivatives represented by formulae (1)-(5) of Ikeda (See

e.g., pages 3-6), or the *particularly preferred symmetrical* anthracene derivatives described and exemplified in Ikeda (See e.g., pages 9-18). Ikeda fails to disclose or reasonably suggest to a skilled artisan the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively. As a result, a skilled artisan would not have arrived at the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the claimed substitution patterns, based on the disclosure Ikeda, absent impermissible hindsight reconstruction, thereby precluding a prima facie case of obviousness.

As acknowledged on page 7, lines 1-2 of the Official Action, Ikeda fails to describe or exemplify the *asymmetric* monoanthracene derivatives of formulae (2)-(4) of the present invention having the substitution patterns recited in claims 2-4, respectively.

In an attempt to compensate for this deficiency, the Examiner alleges on page 8, lines 9-11 of the Official Action that the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the claimed substitution patterns are obvious over the symmetric anthracene derivatives described and exemplified in Ikeda because Ikeda discloses that "the Ar groups may be located at any bonding position on the benzene rings of the formula 1 compound taught by Ikeda."

Applicants respectfully submit that this is an insufficient ground for arriving at a supportable conclusion of obviousness and that such a basis of unpatentability constitutes clear error which is unsustainable on appeal. See e.g., *Procter & Gamble v. Teva Pharmaceuticals*, 90 USPQ2d 1947, 1949 (Fed. Cir. 2009) (holding that prior art which described 2-pyr etidronate (2-pyr EHDP) did not provide a skilled artisan with sufficient motivation and guidance to make the proposed molecular modifications needed to arrive at the claimed 3-pyr etidronate (3-pyr EHDP; a.k.a., risedronate), thereby precluding a prima facie case of obviousness).

The mere possibility that the *symmetric* anthracene derivatives described and exemplified in Ikeda could be modified to arrive at the *asymmetric* monoanthracene derivatives of formulae (2)-(4) of the present invention having the claimed substitution patterns is an insufficient ground for arriving at a supportable conclusion of unpatentability. Ikeda fails to provide a skilled artisan with sufficient motivation and guidance to make the proposed molecular modifications needed to modify the symmetric anthracene derivatives described and exemplified therein to arrive at the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention having the claimed substitution patterns, thereby precluding a prima facie case of obviousness.

A reference must be considered in its entirety, including disclosures that teach away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (Fed. Cir. 1983). Ikeda demonstrates that the exemplified *symmetrical* anthracene derivatives exhibit high efficiency light emission and *high heat resistance* (See e.g., [0115], Table 1, [0117], Table 2). As discussed in the present specification, the *asymmetric* monoanthracene derivatives of formula (1) are deposited at low temperatures in order to *avoid thermal decomposition* (See e.g., [0006] of Kubota (U.S. 2007/0055085), which is the U.S. pre-grant publication of the originally filed application). Accordingly, unlike the *symmetrical* anthracene derivatives of Ikeda, which exhibit high heat resistance, the *asymmetric* monoanthracene derivatives of formula (1) do *not* appear to exhibit high heat resistance.

Ikeda fails to disclose or suggest that the *asymmetric* monoanthracene derivatives of formulae (2)-(4) of the present invention having the claimed substitution patterns exhibit superior properties with respect to remarkably improved luminous efficiency and half life as compared to the inferior properties exhibited by conventional *symmetric* monoanthracene derivatives, such as the symmetric monoanthracene derivative of compound (3) as described and exemplified in Ikeda, thereby precluding a prima facie case of obviousness.

Assuming arguendo that sufficient motivation and guidance is considered to have been provided by the cited references to arrive the claimed asymmetric monoanthracene derivatives of formulae (2)-(4), which is clearly not the case, such a case of obviousness is rebutted by a showing of superior properties and secondary considerations.

As discussed in the present specification, traditional organic electroluminescent (EL) devices comprising conventional anthracene derivatives suffer from inferior properties with respect to luminous efficiency and lifetime (See e.g., page 3, lines 16 and 23). Accordingly, there has been a long-felt need to provide an organic EL device that exhibits superior properties with respect to improved luminous efficiency and lifetime. Based on the limited disclosures of the cited references, other skilled artisans have failed to discover a solution to this long-felt need.

As shown by the comparative experimental data presented in Table 1 of the present specification, which is reproduced in part hereinbelow, Applicants have discovered that an organic electroluminescent device comprising an asymmetric monoanthracene derivative of formulae (2)-(4) of the present invention exhibits superior properties with respect to remarkably improved luminous efficiency and half life (See e.g., page 4, lines 19-25, page 5, lines 1-15, page 8, lines 8-11, page 104, Table 1 and last paragraph, page 105, lines 1-5).

Table 1

	Compound in Luminescent Layer	Luminous Efficiency (cd/A)	Half Life (hour)	Depositing Temperature (°C)
Example 21	AN-213/D1	10.9	4,000	261
Example 22	AN-346/D1	10.7	3,300	254
Example 24	AN-45/D1	11.2	6,200	298
Example 25	AN-72/D1	10.9	4,000	262
Example 26	AN-74/D1	11.0	5800	305
Comparative Example 1	an-1/D1	8.7	900	349
Comparative Example 2	an-2/D1	8.7	800	331
Comparative Example 3	an-3/D1	8.9	500	310

Specifically, the organic EL devices of Examples 21, 22 and 24-26, which comprise an asymmetric monoanthracene derivative of formulae (2)-(4) of the present invention, exhibit superior properties with respect to remarkably improved luminous efficiency and lifetime, as compared to the inferior properties exhibited by the organic EL devices of Comparative Examples 1-3, which comprise conventional symmetric monoanthracene derivatives, such as the symmetric monoanthracene derivative of compound (3) as described and exemplified in Ikeda (See e.g., page 9, line 35).

This evidence clearly demonstrates that the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention exhibit superior properties with respect to remarkably improved luminous efficiency and lifetime, as compared to the inferior properties exhibited by conventional symmetric monoanthracene derivatives, such those described and exemplified in Ikeda.

In contrast, the cited references, when considered alone or in combination, fail to disclose or reasonably suggest to a skilled artisan that an organic electroluminescent device comprising an asymmetrical anthracene derivative of formulae (2)-(4) of the present invention exhibits superior properties with respect to remarkably improved luminous efficiency and half life. Since Cosimbescu and Ikeda fail to recognize that the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention impart remarkably improved luminous efficiency and lifetime properties to an organic electroluminescent device containing the same, these references fail to render obvious to a skilled artisan the asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention.

The Examiner alleges that insufficient evidence has been provided by the Applicants to rebut the case of obviousness over the cited references. The Examiner is of the opinion that the claimed subject matter is not commensurate in scope with the experimental results set forth in the present specification because Applicants have not demonstrated that superior properties with

respect to remarkably improved luminous efficiency and lifetime are exhibited by every species within the genus of asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention.

When considering whether proffered evidence is commensurate in scope with the claimed invention, Office personnel should not require the Applicant to demonstrate superior or unexpected results over the entire range of properties possessed by a chemical compound or composition. See e.g., *In re Chupp*, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987). Evidence of unobviousness of a broad range can be proven by a narrower range when one skilled in the art could ascertain a trend that would allow him/her to reasonably extend the probative value thereof. See e.g., *In re Clemens*, 206 USPQ2d 289 (CCPA 1980).

As demonstrated by the experimental data provided in the present specification, the exemplified asymmetric monoanthracene derivatives of formulae (2)-(4) of the present invention exhibit superior properties with respect to remarkably improved luminous efficiency and lifetime, as compared to the inferior properties exhibited by conventional symmetric monoanthracene derivatives, such those described and exemplified in Ikeda.

Applicants submit that a skilled artisan could readily ascertain a trend in the exemplified data that would allow him/her to reasonably extend the probative value thereof to other asymmetric monoanthracene derivatives of formulae (2)-(4), in accordance with the present invention, thereby rendering the claims reasonably commensurate in scope with the experimental data provided in the present specification.

Withdrawal of these grounds of rejection is respectfully requested.

The rejection of claims 2-4 and 14-25 under 35 U.S.C. § 112, second paragraph, is obviated by amendment. Withdrawal of this ground of rejection is respectfully requested.

In conclusion, Applicants submit that the present application is now in condition for allowance and notification to this effect is earnestly solicited.

Respectfully submitted,

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